

## AMENDMENT

### In the Claims:

**Please cancel claims 1-13 without prejudice or disclaimer.**

**Please enter the following new claims 14-38:**

14. (New) A pharmaceutical parathyroid hormone (PTH) antagonist, wherein the PTH antagonist comprises a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

- a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and
- b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

15. (New) The antagonist of claim 14, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

16. (New) The antagonist of claim 14, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

17. (New) The antagonist of claim 14, further comprising a pharmaceutical carrier or excipient.

18. (New) A method for affecting the binding of parathyroid hormone to a parathyroid hormone receptor through the use of a parathyroid hormone antagonist comprising the administration of a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and

b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

21 19. (New) The method of claim 18, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

20. (New) The method of claim 18, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

21. (New) The method of claim 18, wherein the PTH antagonist is administered together with a pharmaceutical carrier or excipient.

22. (New) A method for treating a patient having hyperparathyroidism comprising administering a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and

b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

23. (New) The method of claim 22, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

24. (New) The method of claim 22, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

25. (New) The method of claim 22, wherein the PTH antagonist is administered together with a pharmaceutical carrier or excipient.

26. (New) A method for treating a patient having renal osteodystrophy comprising administering a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and

b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

27. (New) The method of claim 26, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

28. (New) The method of claim 26, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

29. (New) The method of claim 26, wherein the PTH antagonist is administered together with a pharmaceutical carrier or excipient.

30. (New) A method for *in vivo* modulation of calcium ion concentration in blood comprising administering a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and

b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

31. (New) The method of claim 30, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

32. (New) The method of claim 30, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

33. (New) The method of claim 30, wherein the PTH antagonist is administered together with a pharmaceutical carrier or excipient.

34. (New) A method for treating a patient having osteoporosis comprising administering a peptide having a peptide having a contiguous portion of human PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH<sub>1-84</sub>), or a conservatively substituted variant thereof, exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount, wherein the PTH antagonist has the following characteristics:

a) the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 2 through position 34 of SEQ ID NO:1 (PTH<sub>1-84</sub>); and

b) the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

35. (New) The method of claim 34, wherein the N-terminal amino acid residue of the PTH antagonist starts at any position spanning from position 3 through position 28 of SEQ ID NO:1 (PTH<sub>1-84</sub>), and the C-terminal amino acid residue of the PTH antagonist ends at position 84 of SEQ ID NO:1 (PTH<sub>1-84</sub>).

36. (New) The method of claim 34, wherein the PTH antagonist is selected from the group consisting of SEQ ID NO:2 (PTH<sub>2-84</sub>), SEQ ID NO:4 (PTH<sub>3-84</sub>), SEQ ID NO:5 (PTH<sub>28-84</sub>), and SEQ ID NO:3 (PTH<sub>34-84</sub>).

37. (New) The method of claim 34, wherein the PTH antagonist is administered together with a pharmaceutical carrier or excipient.

38. (New) The method of claim 34, wherein the PTH antagonist administration is either in a continuous or in a pulsatile manner.